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CP-201100761
TXX-11068

Ref: 10 CFR 50.73

July 14, 2011

U. S. Nuclear Regulatory Commission
ATTN: Document Control Desk
Washington, DC 20555-0001

**SUBJECT: COMANCHE PEAK NUCLEAR POWER PLANT (CPNPP) DOCKET NO. 50-446,
LICENSEE EVENT REPORT 446/11-002-00, UNIT 2 MANUAL TRIP DUE TO HIGH
STEAM GENERATOR SODIUM CONCENTRATION**

Dear Sir or Madam:

Pursuant to 10CFR 50.73(a)(2)(iv)(A), Luminant Generation Company LLC (Luminant Power) hereby submits Licensee Event Report (LER) 446/11-002-00, "Unit 2 Manual Trip Due to High Steam Generator Sodium Concentration."

This communication contains no new licensing basis commitments regarding Comanche Peak Units 1 and 2.

Should you have any questions, please contact Jim Barnette at (254) 897-5866.

Sincerely,

Luminant Generation Company LLC

Rafael Flores

By: 
Fred W. Madden
Director, Oversight & Regulatory Affairs

Enclosure - Licensee Event Report 446/11-002-00

c - E. E. Collins, Region IV
B. K. Singal, NRR
Resident Inspectors, CPNPP

A member of the STARS (Strategic Teaming and Resource Sharing) Alliance

Callaway · Comanche Peak · Diablo Canyon · Palo Verde · San Onofre · South Texas Project · Wolf Creek

IE22
WPK

LICENSEE EVENT REPORT (LER)
(See reverse for required number of
digits/characters for each block)

Estimated burden per response to comply with this mandatory collection request: 80 hours. Reported lessons learned are incorporated into the licensing process and fed back to industry. Send comments regarding burden estimate to the FOIA/Privacy Section (T-5 F53), U.S. Nuclear Regulatory Commission, Washington, DC 20555-0001, or by Internet e-mail to infocollects.resource@nrc.gov, and to the Desk Officer, Office of Information and Regulatory Affairs, NEOB-10202, (3150-0104), Office of Management and Budget, Washington, DC 20503. If a means used to impose an information collection does not display a currently valid OMB control number, the NRC may not conduct or sponsor, and a person is not required to respond to, the information collection.

1. FACILITY NAME

Comanche Peak Nuclear Power Plant Unit 2

2. DOCKET NUMBER

05000 446

3. PAGE

1 OF 4

4. TITLE

Unit 2 Manual Trip Due to High Steam Generator Sodium Concentration

5. EVENT DATE			6. LER NUMBER			7. REPORT DATE			8. OTHER FACILITIES INVOLVED	
MONTH	DAY	YEAR	YEAR	SEQUENTIAL NUMBER	REV NO.	MONTH	DAY	YEAR	FACILITY NAME	DOCKET NUMBER
05	19	2011	2011	- 2 -	0	07	14	2011	N/A	05000
									FACILITY NAME	DOCKET NUMBER
										05000

9. OPERATING MODE

1

10. POWER LEVEL

100

11. THIS REPORT IS SUBMITTED PURSUANT TO THE REQUIREMENTS OF 10 CFR §: (Check all that apply)

- | | | | |
|---|---|--|--|
| <input type="checkbox"/> 20.2201(b) | <input type="checkbox"/> 20.2203(a)(3)(i) | <input type="checkbox"/> 50.73(a)(2)(i)(C) | <input type="checkbox"/> 50.73(a)(2)(vii) |
| <input type="checkbox"/> 20.2201(d) | <input type="checkbox"/> 20.2203(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(ii)(A) | <input type="checkbox"/> 50.73(a)(2)(viii)(A) |
| <input type="checkbox"/> 20.2203(a)(1) | <input type="checkbox"/> 20.2203(a)(4) | <input type="checkbox"/> 50.73(a)(2)(ii)(B) | <input type="checkbox"/> 50.73(a)(2)(viii)(B) |
| <input type="checkbox"/> 20.2203(a)(2)(i) | <input type="checkbox"/> 50.36(c)(1)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(iii) | <input type="checkbox"/> 50.73(a)(2)(ix)(A) |
| <input type="checkbox"/> 20.2203(a)(2)(ii) | <input type="checkbox"/> 50.36(c)(1)(ii)(A) | <input checked="" type="checkbox"/> 50.73(a)(2)(iv)(A) | <input type="checkbox"/> 50.73(a)(2)(x) |
| <input type="checkbox"/> 20.2203(a)(2)(iii) | <input type="checkbox"/> 50.36(c)(2) | <input type="checkbox"/> 50.73(a)(2)(v)(A) | <input type="checkbox"/> 73.71(a)(4) |
| <input type="checkbox"/> 20.2203(a)(2)(iv) | <input type="checkbox"/> 50.46(a)(3)(ii) | <input type="checkbox"/> 50.73(a)(2)(v)(B) | <input type="checkbox"/> 73.71(a)(5) |
| <input type="checkbox"/> 20.2203(a)(2)(v) | <input type="checkbox"/> 50.73(a)(2)(i)(A) | <input type="checkbox"/> 50.73(a)(2)(v)(C) | <input type="checkbox"/> OTHER |
| <input type="checkbox"/> 20.2203(a)(2)(vi) | <input type="checkbox"/> 50.73(a)(2)(i)(B) | <input type="checkbox"/> 50.73(a)(2)(v)(D) | Specify in Abstract below
or in NRC Form 366A |

12. LICENSEE CONTACT FOR THIS LER

FACILITY NAME

Timothy A. Hope, Manager, Nuclear Licensing

TELEPHONE NUMBER (Include Area Code)

(254) 897-6370

13. COMPLETE ONE LINE FOR EACH COMPONENT FAILURE DESCRIBED IN THIS REPORT

CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX	CAUSE	SYSTEM	COMPONENT	MANUFACTURER	REPORTABLE TO EPIX

14. SUPPLEMENTAL REPORT EXPECTED☐ YES (If yes, complete 15. EXPECTED SUBMISSION DATE) ☒ NO**15. EXPECTED SUBMISSION DATE**

MONTH	DAY	YEAR

ABSTRACT (Limit to 1400 spaces, i.e., approximately 15 single-spaced typewritten lines)

On 5/19/2011, at approximately 1407 hours, Comanche Peak Nuclear Power Plant (CPNPP) Unit 2 was manually tripped due to high sodium concentration in all four steam generators. Unit 2 was operating at 100 percent power at normal operating temperature and pressure when chemistry instrumentation indicated a condenser tube leak. Steam generator sodium concentrations rapidly exceeded the manual trip criteria. All systems responded normally during and following the manual reactor trip.

The leak from two condenser tubes was caused by a falling object impacting the tube exteriors. All tubes considered to have been susceptible to damage were examined by eddy current testing and visual exams. Leaking or damaged tubes were plugged and the unit was returned to 100 percent power once chemistry parameters were reestablished within limits.

All times in this report are approximate and Central Standard Time unless noted otherwise.

**LICENSEE EVENT REPORT (LER) U.S. NUCLEAR REGULATORY COMMISSION
CONTINUATION SHEET**

1. FACILITY NAME	2. DOCKET	6. LER NUMBER			3. PAGE
Comanche Peak Nuclear Power Plant Unit 2	05000 466	YEAR	SEQUENTIAL NUMBER	REV NO.	2 OF 4
		2011	- 002	- 00	

NARRATIVE

I. DESCRIPTION OF REPORTABLE EVENT

A. REPORTABLE EVENT CLASSIFICATION

10CFR50.73(a)(2)(iv)(A), Any event or condition that resulted in manual or automatic actuation of any of the systems listed in paragraph (a)(2)(iv)(B) of this section including:

- 10CFR50.73(a)(2)(iv)(B)(1), Reactor protection system (RPS) including: reactor scram or reactor trip
- 10CFR50.73(a)(2)(iv)(B)(6), PWR auxiliary or emergency feedwater system

B. PLANT OPERATING CONDITIONS PRIOR TO THE EVENT

On May 19, 2011, CPNPP Unit 2 was in Mode 1 operating at 100 percent power.

C. STATUS OF STRUCTURES, SYSTEMS, OR COMPONENTS THAT WERE INOPERABLE AT THE START OF THE EVENT AND THAT CONTRIBUTED TO THE EVENT

There were no inoperable structures, systems, or components that contributed to the event.

D. NARRATIVE SUMMARY OF THE EVENT, INCLUDING DATES AND APPROXIMATE TIMES

At 1350 on May 19, 2011 a Condensate Polishing System alarm occurred on the Comanche Peak Unit 2 Main Control Board followed immediately by alarms from other secondary sample points including the Steam Generator Blowdown Sample Panel (SGBD). At 1357, Unit 2 operators (Utility, Licensed) entered Abnormal Conditions Procedures Manual, ABN-304, "Main Condenser and Circulating Water System Malfunction" due to indications of a condenser [EHS: COND] tube leak.

Sodium concentration in the Unit 2 steam generators [EHS: SG] increased rapidly to approximately 3000 parts per billion. In accordance with ABN-304, the Unit 2 reactor was manually tripped at 1407 on 5/19/2011, due to steam generator sodium concentration greater than 1000 parts per billion.

All control rods fully inserted and both Motor Driven Auxiliary Feedwater Pumps [EHS: (BA)(P)] started as expected as a result of the reactor trip. The Turbine Driven Auxiliary Feedwater Pump also started on receipt of low level signals from more than one steam generator immediately after the trip. All systems responded normally during and after the event. There were no safety consequences impacting plant or public safety as a result of this event.

E. THE METHOD OF DISCOVERY OF EACH COMPONENT OR SYSTEM FAILURE, OR PROCEDURAL OR PERSONNEL ERROR

Control board indications and alarms, as well as local chemistry instrumentation readings alerted Unit 2 reactor operators (Utility, Licensed) to the condenser tube leak.

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NARRATIVE

II. COMPONENT OR SYSTEM FAILURES

A. FAILURE MODE, MECHANISM, AND EFFECTS OF EACH FAILED COMPONENT

Not applicable – there were no component failures associated with this event.

B. CAUSE OF EACH COMPONENT OR SYSTEM FAILURE

Not applicable – there were no component or system failures associated with this event.

C. SYSTEMS OR SECONDARY FUNCTIONS THAT WERE AFFECTED BY FAILURE OF COMPONENTS WITH MULTIPLE FUNCTIONS

Not applicable – there were no component or system failures associated with this event.

D. FAILED COMPONENT INFORMATION

Not applicable – there were no component failures associated with this event.

III. ANALYSIS OF THE EVENT

A. SAFETY SYSTEM RESPONSES THAT OCCURRED

The Reactor Protection System (RPS) was manually actuated to initiate this event. Both Motor Driven Auxiliary Feedwater Pumps and the Turbine Driven Auxiliary Feedwater Pump started as expected as a result of the reactor trip.

B. DURATION OF SAFETY SYSTEM TRAIN INOPERABILITY

Not applicable -- No safety system was rendered inoperable.

C. SAFETY CONSEQUENCES AND IMPLICATIONS

There were no inoperable structures, systems, or components at the time that contributed to this event. The plant responded as designed for the manual reactor trip followed by the automatic initiation of the auxiliary feedwater system. This event is bounded in severity by the analysis of the loss of normal feedwater event presented in Section 15.2.7 of the CPNPP Final Safety Analysis Report (FSAR), which assumes conservative initial conditions that bound the plant operating range and other assumptions which could reduce the capability of safety systems to mitigate the consequences of the transient.

High concentrations of sodium are a long term concern for steam generator tube integrity; prolonged exposure to out-of-specification sodium levels could shorten steam generator tube life and increase the possibility of steam generator tube failure. Based on the short duration of exposure, this event is not expected to impact nuclear safety.

Based on the above, it is concluded that the health and safety of the public were unaffected by this condition and this event has been evaluated to not meet the definition of a safety system functional failure per 10CFR50.73(a)(2)(v).

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NARRATIVE

IV. CAUSE OF THE EVENT

The Unit 2 reactor was manually tripped due to high sodium concentrations in the steam generators. The sodium excursion was the result of a falling object causing the sudden failure of two tubes in the Unit 2 main condenser allowing lake water to enter the condensate system and accumulate in the steam generators. The sodium concentration in the steam generators rapidly exceeded the ABN-304 manual trip criteria of 1000 parts per billion.

Evaluation of the condenser tubes using Sodium hexafluoride (SF6) gas and dimple plug testing identified the two breached tubes. Subsequent boroscope and eddy current testing (ECT) revealed indications the two tubes were struck by a falling object. Six additional tubes were identified to have external denting that did not exist at the conclusion of the previous refueling outage. All of the tube damage occurred in the same general location approximately 4.5 feet from the inlet side tube sheet.

V. CORRECTIVE ACTIONS

The two ruptured tubes and six dented tubes were plugged, along with an additional seven adjacent tubes as a preventative measure.

Following the tube plugging activities, an Engineering evaluation was performed to determine the acceptability of returning the Unit 2 main condenser to service. The Unit 2 main condenser was then returned to service, secondary and steam generator chemistry restored to limits, and Unit 2 was returned to 100 percent power.

VI. PREVIOUS SIMILAR EVENTS

There have been no similar events reported from CPNPP in at least the last three years.